

The Transformation from Defence Procurement to Defence Acquisition – Opportunities for New Forms of Analytical Support

Mr Thomas Ekström

FOI, The Swedish Defence Research Agency
SE-164 90 Stockholm
SWEDEN

thomas.ekstrom@foi.se

ABSTRACT

As a consequence of the ending of the Cold War, the Armed Forces (AF) of many countries in the world are currently going through radical transformation. For many countries, this transformation has been dramatic especially for their logistical concepts, supply chains and defence procurement. In some countries, terminology has changed, so that defence acquisition is now being used, in order to emphasise the profound transformation that defence procurement is currently going through. Many Defence Procurement Agencies (DPAs) are now moving from having previously primarily been staffed by technical experts, to becoming more professional purchasers, relying more on a businesslike behaviour, obviously requiring new competencies, changed corporate culture and a more adequate organisation. Politically promoted expressions like “Doing more with less” and “reduced (minimised, optimised) logistics footprint (or tail)” illustrate the increased pressure on the DPAs of the world to reduce cost. Public Private Partnerships (PPPs), Commercial-Off-The-Shelf (COTS), Military-Off-The-Shelf (MOTS), Government-Off-The-Shelf (GOTS), outsourcing, contracting and Joint Ventures (JVs) illustrate some of the new Business Models (BMs) that the DPAs of the world are now exploring. Other avenues of reducing costs, like the utilisation of new Information and Communication Technology (ICT), commercial best practices, and new ways of international cooperation, are also being investigated. The purpose of this paper is to illustrate how the transformation from defence procurement to defence acquisition presents the analytical community with new avenues of possible analytical support, during the transformation, as well as after the transformation, since uncertainty and complexity is being dramatically increased.

1.0 INTRODUCTION

The Swedish AF is currently in a state of unprecedented transformation, involving the transition from a defence force against invasion, prevalent during the Second World War (WW2) and throughout the Cold War, to a modern, flexible and mobile operational defence force, which can defend Sweden as well as participate in international operations. The transformation has been guided by a series of bills authored by the Swedish Ministry of Defence (MoD) and approved by the Swedish Parliament. The foundation for the renewal of the Swedish AF was initially laid down in the bills “A changing world, a reformed defence” [1], and “The new defence” [2], which have later been followed by several bills concerning the transformation. The most influential of these bills include “A continued renewal of the defence” [3], “Society's security and preparedness” [4], “Our future defence” [5], and “A useful defence” [6].

In Chapter 2.0, the reasons that brought about the ongoing transformation of the Swedish AF are outlined. Swedish production logistics during the Cold War Era is described in Chapter 3.0, Swedish production logistics in the Post Cold War Era is described in Chapter 4.0, and Swedish consumption logistics in the Post Cold War Era is described in Chapter 5.0. The implications for new forms of analytical support to defence acquisition are discussed in Chapter 6.0, and the conclusions of the conducted research are presented in Chapter 7.0. Acronyms and references are presented in Chapter 8.0 and 9.0, respectively.

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2.0 BACKGROUND TO THE TRANSFORMATION

The past two decades have seen several dramatic developments, in many different areas, that have had a profound influence on AF in general, and, perhaps, of their logistical functions in particular. These developments include the ending of the Cold War; ensuing changes in national security and defence policies; consequent budgetary reductions for military expenditure; emerging political aspirations to participate in an increasing number of Peace Support Operations (PSOs) of increasing complexity, in most parts of the world, and led by an increasing number of different organisations and constellations of different nations; Lessons Learned (LL) from these PSOs, perhaps especially in the area of logistics; revolutionary development in the area of ICT; and the emergence of novel commercial best practises in the areas of business and business logistics. Within the European Union (EU), there have also been changes in the legislation regarding the conduct of public purchase, which have had a profound effect on governmental business. In isolation, any of these developments could probably have had a tremendous influence on the AF and their logistical functions. Together, and in combination with the LL from the wars in the Persian Gulf, these developments paved the way for an unparalleled transformation of the AF, particularly in the US labelled a Revolution in Military Affairs (RMA). At least in the US, one of the prerequisites of the RMA was considered to be a corresponding Revolution in Military Logistics (RML).

After WW2, the member states of the North Atlantic Treaty Organisation (NATO) and the Warsaw Pact (WP), as well as many other countries in Europe, including Sweden, prepared for a full-scale, third World War (WW3) on European soil. These war-preparations included the build-up of gargantuan stores of supply. The underlying philosophy was to have the potentially necessary supplies ready, Just-In-Case (JIC), in order to avoid having to produce and move mountains of supplies in a very limited time, like in the previous two World Wars. Especially the US, a major contributor of supplies during WW1 and WW2, was extremely reluctant to put itself in a similar situation again. Two decades ago, the Berlin Wall came down; East and West Germany were reunited; the Soviet Union was dissolved; and the WP broke up, effectively putting an end to the era of the Cold War. The ending of the Cold War is one of the most, arguably the most, important developments behind the RMA. It had the direct effect that it led to changes in national defence and security policies, as well as in defence and security policies for organisations such as the United Nations (UN), NATO, and the EU, followed by reductions in defence expenditure.

Roughly at the same time as the Cold War ended, Iraq invaded Kuwait. As a response to this aggression, the US immediately deployed troops to the Persian Gulf, under the code name Operation Desert Shield (ODS, 1990). After the necessary UN Security Council (UNSC) resolution in 1991, the US then led a coalition of more than 30 different countries. The US code name for its own efforts in this phase of what is now known as the First Gulf War was Operation Desert Storm (ODS, 1991). The UK, the other major contributor to the war, code name for both phases of the war was Operation Granby.

The first UN peacekeeping (PK) operation was launched in Israel (Palestine) in 1948. Since then there have been more than 60 UN PK operations around the world. Throughout the Cold War, there were several UN PK operations, but it was not until the ending of the Cold War that the Security Council established larger and more complex UN PK missions. Having originally been developed as a means to deal with inter-State conflict, UN PK has evolved to be applied also to intra-State conflicts and civil wars.

The operations have also expanded from traditional military operations to more complex operations that include administrators, economists, police officers, legal experts, electoral observers, human rights monitors, specialists in civil affairs and governance, humanitarian workers, and experts in ICT. During the Cold War, NATO limited itself to solving conflicts within its member states. Since 1994, however, also NATO has been involved in PK, coordinated with the UN PK operations and UN directives. Since 2003, the EU has also been involved in PK operations, using the acronym EUFOR, or European Union Force.

The disintegration of Yugoslavia led to serious unrest in the Balkans, eventually forcing other nations to intervene. The first NATO-led multinational PK force was the Implementation Force (IFOR), in Bosnia and Herzegovina in 1995. The task of IFOR was taken over by the NATO-led multinational force the Stabilisation Force (SFOR) in 1996. SFOR operated under Peace Enforcement (PE) Rules Of Engagement (ROE). The SFOR was succeeded by EUFOR Althea in 2004. The Kosovo Force (KFOR) is another NATO-led international force under UN mandate in the Balkans, which entered Kosovo in 1999.

The attack by Al-Qaeda on the US on September 11, 2001 led to the Global War On Terrorism (GWOT), which has resulted in the wars in Afghanistan (2001) and Iraq (2003), referred to by the US as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom. The International Security Assistance Force (ISAF) is a NATO-led security and development mission in Afghanistan established by the UNSC.

Changes in security and defence policies have had a profound effect on the AF of the world, which have been obliged to participate in an ever increasing number of international missions throughout the world. Sweden is no exception, but has followed the lead of other countries and radically increased its participation in PSOs. The last couple of years, Sweden has participated in IFOR, SFOR, KFOR, EUFOR Althea, ISAF, etc. Today, participation in PSOs is one of the tasks that the Swedish Government has assigned to its AF, whereas previously, defending the borders of Sweden was the AFs only task.

One of the major lessons that was identified after the ending of the Cold War, particularly during the preparations and conduct of the first Gulf War, was that the logistical concept that had served its purpose so well for so long, i.e. to stock-pile gargantuan supplies in Europe in order to support war efforts on the European theatre, JIC, had more or less instantaneously become obsolete. It was too expensive, too slow and stored the supplies were they were no longer needed. To address the challenges of participation in more PSOs with increasing complexity, in most parts of the world and led by an increasing number of different organisations, it was realised that the logistical concept would have to be altered completely. Focus switched to the war fighter, who was supposed to be supplied with the right supply, at the right time, at the right place, and at the right price.

During WW2, and throughout most of the Cold War, the requirements of the AF were drivers for technological development in many areas. With the arrival of the revolution in ICT in the 1980s, this state of affairs was about to change, perhaps for ever. In combination with the fact that Governments, after the ending of the Cold War, are no longer prepared to spend as much of their available resources on the military as previously, it has certainly had the effect that the AF is currently not in a position to consider themselves as drivers behind the technological development, especially not in the area of ICT. The emergences of civilian applications like Electronic Data Interchange (EDI), the World-Wide-Web (WWW), cellular phones, bar-codes, Radio Frequency Identification (RFID), broad band, etc., meant that the AF were faced with a number of unexploited technological opportunities. Especially in the US this led to a transformation initiative (RMA) that included concepts like Dominant Battle-space Awareness (DBA), which was supposed to be realised by the superior utilisation of new ICT. While the realisations of DBA may be debatable, the utilisation of new ICT like RFID, has indeed aided the development of new military capabilities such as Total Asset Visibility (TAV) and In Transit Visibility (ITV).

Throughout the world the US RMA initiated new concepts like Network Centric Warfare (NCW) in the US, Network Enabled Capabilities (NEC) in the UK, and Network Based Defence (NBD) in Sweden.

Indeed, the development of new concepts has become so important, so complex, and so dependant on international cooperation, that new centres for national experimentation, as well as for Multinational Experimentation (MNE), using a new method called Concept Development and Experimentation (CD&E), have emerged over the past few years. At these centres, including at the Joint Concept Development and Experimentation Centre (JCD&EC) at the Joint Forces Command (JFC) in Sweden, new concepts, like NCW, NEC, NBD, Effect Based Operations (EBO), Effect Based Approach to Operations (EBAO), Comprehensive Approach (CA), and Expeditionary operations, have been invented, developed and tested.

Concept development through MNE is certainly not the only area that has seen an increase in international military cooperation the past few years. Particularly the areas of joint exercises, joint operations, joint defence acquisition, and cooperation regarding strategic transportation, especially air lift, have seen a number of new initiatives in order to help solve common problems. The Partnership for Peace (PfP) was launched by NATO in 1994 as a bilateral cooperation between NATO and individual partner countries. After two rounds of NATO enlargements, where former partners have become allies, there are currently 28 members of the alliance, and 22 remaining partners.

For practically working together in PSOs, new concepts have been developed and implemented. The Combined Joint Task Force (CJTF) Concept is a multinational (combined) and multi-service (joint) task force developed by NATO, which is task-organised and formed for the full range of the Alliance's military missions requiring multinational and multi-service command and control by a CJTF Headquarters (HQ). EU has contributed with the Battle Group (BG) concept and the EU Command and Control (C2) concept. The EU C2-concept consists of an Operational Headquarters (OHQ) at the military-strategic level, a Force Headquarters (FHQ) at the operational level, Component Commands (CC) for the different arenas (land, maritime, air) at the tactical level, and, e.g., BGs at unit level. The NATO Maintenance and Supply Agency (NAMSA) is NATO's principal logistics support management agency. Its main areas of interest are supply, maintenance, procurement, contract management, and engineering and technical support.

Air lift capabilities are essential in order to participate in missions throughout the world. Aircraft to realise this capability are, however, extremely expensive, and are an extremely limited resource. Hence, a number of international initiatives to share costs have been established. These initiatives include the Movement Coordination Centre, Europe (MCCE); Air Transport, Air Refuelling and other Exchanges of Services (ATARES); Strategic Airlift Interim Solution (SALIS); Strategic Airlift Capability (SAC); the European Air Transport Fleet (EATF); and the European Air Transport Command (EATC). The MCCE was established as an amalgamation of the Sealift Coordination Centre (SCC) and the European Airlift Centre (EAC). The MCCE is a multinational organisation based on Technical Arrangements (TAs), signed by the participating countries. The MCCE coordinates air, sea, land, and channel transportation; and air-to-air refuelling resources. The MCCE supports NATO as well as EU operations. ATARES is a TA, established in order to facilitate the exchange of military capabilities based on equivalent flying hours with Lockheed C-130 Hercules. SALIS is an interim solution, through which 6 Antonov AN-124 Ruslan are chartered. SAC is a permanent solution, through which its member states have acquired 3 Boeing C-17 Globemaster III. The EATF, will, when established, consist of twelve countries, which have ordered Airbus A400M or contributes with other transportation aircraft.

In the US it was realised that the RMA could not be realised without a parallel RML. After WW2, military logistics gave birth to business logistics. After the ending of the Cold War, however, it was realised that business logistics had developed a number of new commercial best practices and concepts, like Just-In-Time (JIT), Supply Chain Management (SCM), outsourcing, lean, agile, etc, which the AF had yet to explore, adapt and possibly adopt, in order to increase efficiency and effectiveness. Undoubtedly, revolutionary development in the area of ICT, as well as the emergence of novel commercial best practises in the areas of business and business logistics, have had a tremendous effect on the AF of the world. In the area of military logistics, the requirement to “do more with less” has led to the development of new concepts like adequate (reduced, optimised, minimised) footprint, or reduced logistics tail; focused

logistics; accelerated logistics; Velocity Management¹ (VM); Just Enough (rather than the exaggerated JIT or JIC); contracting; TAV; and ITV; through the utilisation of new ICT and the adaptation and adoption of new commercial best practises. The necessity to “do more with less” has also led to the utilisation of COTS, MOTS, and GOTS products and services, as well as the exploitation of PPPs.

In summary, after the ending of the Cold War, the AF were faced with a number of challenges, primarily induced by political, economic, social, and technological developments. There was a (still ongoing) transformation from military forces that had been designed for national defence in full-scale military conflicts in Europe to flexible military units that can be deployed in PSOs around the globe. It was realised that the logistical system had become obsolete. The revolutionary development in the area of ICT had, to a large extent, yet to be exploited by the AF. The emergence of new commercial best practises in the area of business logistics had yet to be exploited. As is common in times of peace, there was also an increasing pressure from Governments to reduce costs in the military system, which, i.a., led to the necessity to exploit COTS, MOTS, GOTS, PPPs, and other forms of BMs.

From a Swedish point of view, there were also other developments to take into consideration, increasing the complexity even further. In 1973, a new concept, business-like approach (Swedish: affärsmässighet) was introduced into the Swedish Public Procurement Ordinance. Some twenty years later, in 1995, Sweden became a member state of the EU. The several adjustments of the Swedish society that were a prerequisite of becoming a member state included considerable alterations of the Swedish legislative systems. Among other new laws that were introduced, “The Law Regarding Public Purchase” LOU (1994) would come to have a profound effect on public purchasing. From the point of view of defence acquisition, the ending of the Cold War also meant a transition from legislative regulation regarding defence procurement, to contracts with suppliers being based strictly on commercial grounds.

Further, Sweden had previously remained outside alliances like NATO and the EU, in order to be able to remain neutral in the event of war. This changed when Sweden became a member state in the EU, with clear and developing ambitions in the areas of security and defence policies, and when Sweden decided to participate in international missions and international cooperation in different military areas. The last two decades, Sweden has participated with military units in operations like IFOR, SFOR, KFOR, EUFOR Althea, ISAF, etc. Sweden has also participated in initiatives such as NATO PfP, EU BG, MNE, NAMSA, MCCE, ATARES, SALIS, and SAC. The participation in the EU BG concept was as one of the contributors to the Nordic Battle Group, NBG. Also, the defence industry in Sweden was domestic during the Cold War Era. With the current globalisation and internationalisation of industry, this is definitely no longer the case. All things considered, it is probably fair to say that Sweden, from a military point of view, is in the process of going from a rather closed and static military supply system, based on regulation, and designed to defend Sweden, to an open and dynamic military supply system, based on contracts, and supposed to be used outside the borders of Sweden, as well as to defend Sweden. The Swedish AF and FMV must, of course, deal with the generic challenges, as outlined above, that face all AF. However, the Swedish AF and, perhaps particularly, FMV must also face the challenges that are indigenous to Swedish circumstances, hence increasing the complexity even further.

Military logistics in general and the military supply chain in particular is the setting for the research reported in this paper. Hence, in Chapters 3.0, 4.0 and 5.0, the Cold War and Post Cold War military supply chains, or, perhaps more appropriately, the military supply and support networks, are generically illustrated from the point of view of the procurement of a complex piece of military equipment, e.g. a Main Battle Tank (MBT); a war ship; a fighter aircraft; or a C2 system; which constitutes a significant part of a required military capability. A military capability certainly consists of much more than a technical

¹ VM was developed for the US DoD by the RAND Corp. VM is based on commercial best practices, e.g. Six Sigma, and hence the Deming, or Shewhart, cycle, i.e. the PDSA (Plan, Do, Study, Act) cycle, or the PDCA (Plan, Do, Check, Act) cycle. In Six Sigma programs, the PDSA cycle is called DMAIC (Define, Measure, Analyse, Improve, and Control). In VM, DMAIC has been distilled down to a three letter acronym; DMI (Define, Measure, Improve).

system. In the US, e.g., a capability is often described as a combination of doctrine, organisation, training, materiel, leadership and education, personnel and facilities (DOTMLPF). In the UK, a combination of all defence lines of development (DLoDs), i.e. training, equipment, personnel, information, doctrine, organisation, infrastructure and logistics (TEPID OIL), is often used to describe the different aspects of a capability. In addition, defence procurement certainly encompasses much more than the purchase of military platforms, but the most complex type of procurement is used as an illustrative example in this paper. The generic military supply chains (networks) also exclude the fact that the procurement of advanced and expensive systems would, of course, have to be approved by the Government. For the purposes of this paper, however, the simplified descriptions in the ensuing chapters are sufficient. Further, for the purposes of this paper, the terms production logistics (intended to be roughly equivalent to a subset of strategic logistics) and consumption logistics (intended to be roughly equivalent to a combination of operational logistics and tactical logistics) will be used, in order to describe and emphasise the distinction between the production and storage of capabilities during the Cold War Era, and the production, storage and utilisation of capabilities, that characterise the Post Cold War Era military supply network in Sweden.

3.0 SWEDISH PRODUCTION LOGISTICS DURING THE COLD WAR ERA

As previously stated, from a military point of view, Sweden could be regarded as a stable, closed system during the Cold War Era. Sweden was self-contained, with an advanced domestic defence industry, predominantly providing state-of-the-art equipment to the AF. Sweden participated in a number of UN missions, e.g. in the Congo and on Cyprus, but the AF were primarily designed and dimensioned to constitute a defence force on Swedish soil. At the micro level, the military supply chain consisted of the three actors the AF, FMV, and the domestic defence industry. Since Sweden is a relatively small country, the domestic defence industry consisted, of course, of a very limited number of potential suppliers for a specific piece of equipment. The roles, responsibilities, interactions, and interfaces between the three actors had developed over several decades and were clearly defined. At the macro level, Sweden was, of course, not an isolated island during the Cold War, but, from a military point of view, the supply chain was primarily influenced by stable security and defence policies, including a stable defence budget; and stable defence-driven technology development, delivered by a stable domestic defence industry.

Based on directives and guidelines, regarding tasks and available resources, from the Government, the Swedish AF would initially define which capabilities it required in order to perform its assigned tasks. FMV would then, in cooperation with the Swedish AF, transform these requirements into system specifications. After approval by the Government, FMV would then procure the system from an appropriate domestic supplier, while instructing the supplier to develop the system according to the specifications. The supplier would then develop the system and deliver it to FMV. FMV would, in turn, receive the system and integrate it with existing systems within the Swedish AF. The system would eventually constitute a part of the required capability, and be delivered to the Swedish AF. Sweden has not been in a state of war for more than 200 years by now. Hence, the required capability could after delivery be regarded as being put into storage. FMV would remain responsible for maintenance and repairs of the system until it was eventually taken out of service and destroyed, sold, or otherwise disposed of.

During the Cold War, the Swedish AF, and its supply chain, was designed for one task; national defence. Since Sweden has been fortunate enough not to participate in any wars since 1809, the supply chain can be described as a system designed to produce capabilities that were never used. This Cold War system can be regarded as an example of military production logistics, military logistics at the strategic level, which is not followed by military consumption logistics, military logistics at the operational and tactical level. For a generic piece of equipment that was necessary for some generic capability, the supply chain of the Cold War Era can be illustrated as in Figure 1. Figure 1 illustrates the military supply chain, including the actors, their relationships and their main areas of responsibilities. Hence, Figure 1 illustrates the logistical interfaces between the actors, as well as the supply concept of the Cold War Era. Figure 1 also illustrates

the principal flows in the supply chain, but only the main directions of the principal flows are depicted. In reality, there would, of course, be information flowing in both directions, and there would also be a reverse physical flow, representing, e.g., the return of damaged equipment.

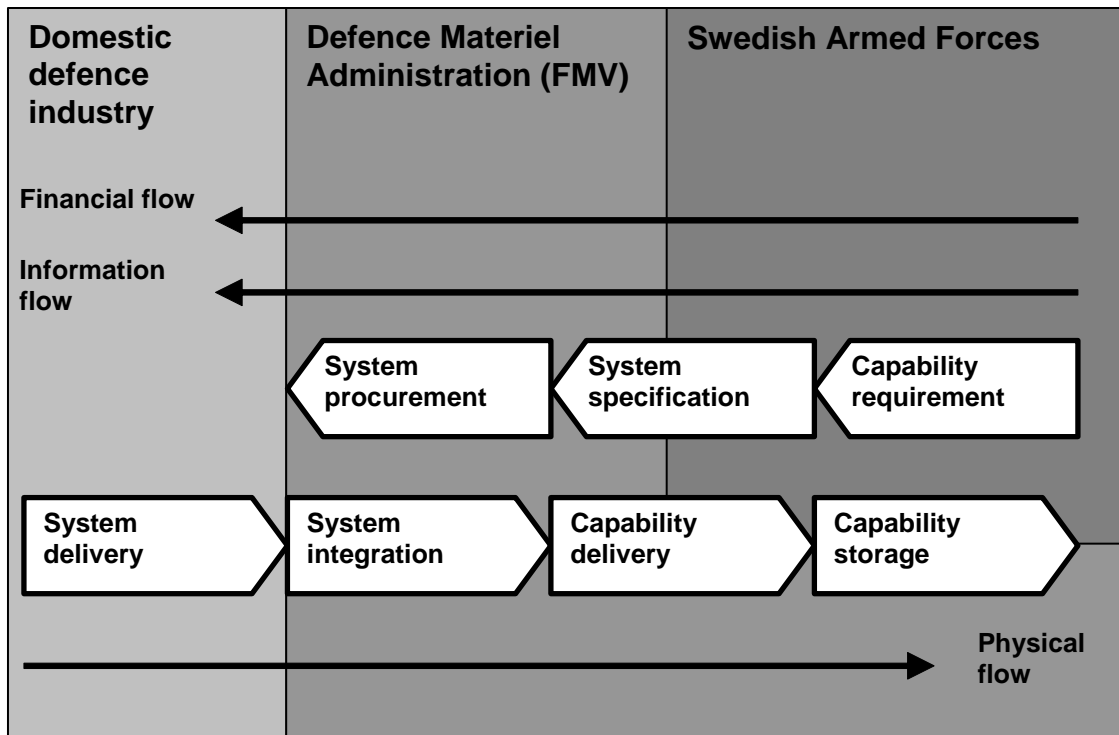


Figure 1: A generic illustration of the static, closed military supply chain of the Cold War Era
(Source: the author).

Throughout the Cold War, the external factors, i.e. the political; economic; societal; and technological environment; influencing the military supply chain remained relatively stable. Defence and security policies, and hence the defence budget, remained stable and predictable. Military technology development was stable, driven by the requirements of the Swedish AF, and delivered by a stable domestic defence industry. The outlined process was the only way in which new systems were procured during the Cold War Era, and, using the terminology suggested in this paper, this process can be argued to constitute the only BM that was in use during this period. At least in Sweden, analytical support to this process was primarily provided to the Swedish AF to assist the first step of the process, i.e. capability requirements. Analytical tools that were being used in the long range planning process, which would eventually produce capability requirements, typically included: scenario techniques; war-gaming; Modelling and Simulation (M&S); cost-effect analysis or Cost Benefit Analysis (CBA); etc. Problem structuring methods (PSMs) such as Morphological Analysis (MA) were also used. Perhaps due to the fact that the ensuing process was rather straightforward, FMV did not receive analytical support for the remaining steps. Transforming capability requirements into system specifications is a much more technical issue than it is analytical.

4.0 SWEDISH PRODUCTION LOGISTICS IN THE POST COLD WAR ERA

Since the ending of the Cold War, the Swedish AF is in a state of transformation from a domestic defence force to a flexible, deployable force. The relatively easily described military supply chain of the Cold War Era is now in a state of flux. New types of missions, e.g. KFOR, have to be provided for, new military concepts, e.g. NBD, have to be considered, and, simultaneously and in parallel, new ICTs, e.g. TAV, are

being implemented; new commercial best practises, e.g. SCM, are being evaluated, adapted and adopted; COTS, MOTS and GOTS products and services are being utilised; and PPPs are being investigated and initiated, in order to make the supply chain more effective, and efficient, while at the same time consuming less resources. Not even the actors have remained the same. The defence industry is now multinational, and FMLOG, the Swedish Defence Logistics Organisation (DLO), has entered the scene.

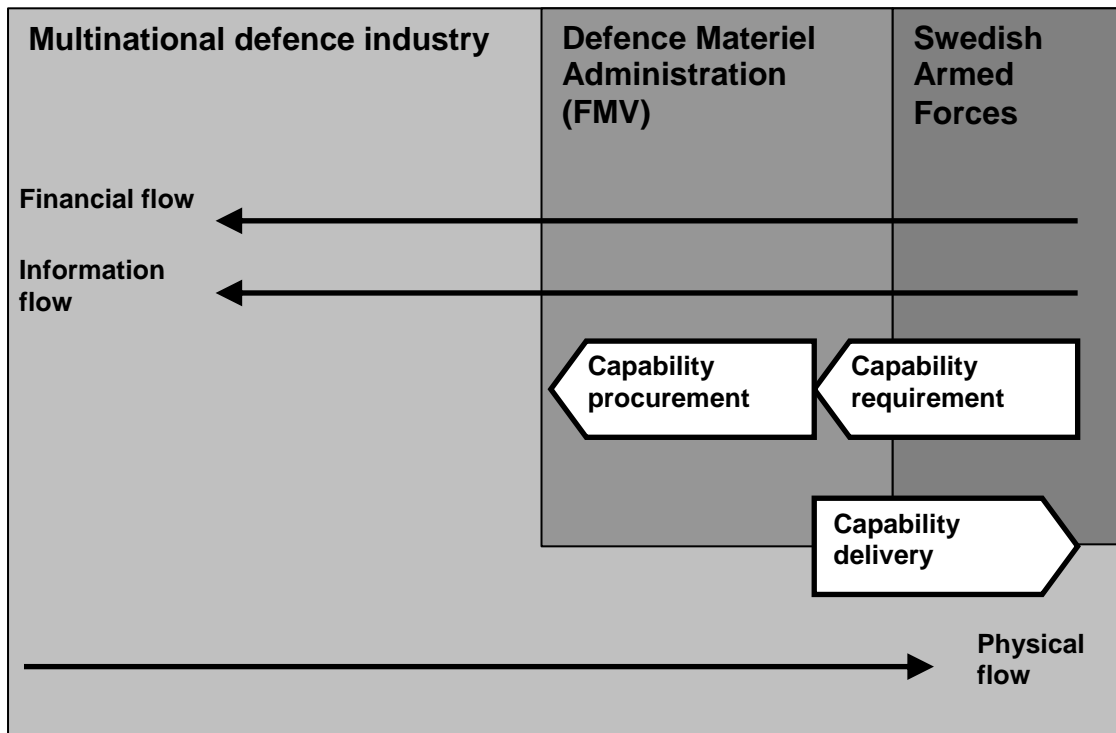


Figure 2: A generic illustration of one extreme of the dynamic, open military supply chain of the Post Cold War Era (Source: the author).

While the generic illustration of the static, closed military supply chain of the Cold War Era, as depicted in Figure 1, is still valid after the ending of the Cold War, it is now only one of the extremes of an entire spectrum of possible supply chains in the Post Cold War Era, i.e. it now only represents one BM among many. Figure 2 illustrates the other extreme of the dynamic, open military supply chain. The other extreme of this spectrum occurs when the Swedish AF forces define which capabilities it requires, FMV acquires this capability, and the multinational defence industry delivers the capability anywhere in the world that it is required. Since the Swedish AF is now participating in PSOs, the capabilities are no longer being put into storage, but are being put to operational use throughout the world. Between these two exaggerated extremes, an entire new spectrum of possible BMs now exists.

After the ending of the Cold War, the Swedish Defence, and hence its supply chain, is used for four tasks; national defence, international missions, territorial integrity, and support to society. Even if Sweden has managed to stay out of outright war, Swedish military units are now being used in PSOs throughout the world. Hence, the supply chain must now be described as a system that is going to be used, even though it has not yet been thoroughly redesigned. The Post Cold War system can be regarded as an example of military production logistics that is followed by military consumption logistics.

Most of the changes in the military supply chain have, of course, their origin in the external environment. Sweden, that previously stayed out of alliances in order to be able to remain a neutral country in the event of war, and had very limited military cooperation and collaboration with other nations, is now a member-

state of the EU, which has increasing aspirations in the military domain; is one of the remaining member states of PfP; and an active contributor of military forces to UN, as well as UN endorsed EU- and NATO-led coalitions, in several missions throughout the world. The development of new technology is no longer necessarily driven by the requirements of the AF, particularly not in the area of ICT. Business logistics, which was born out of the military success in logistics during WW2, has now developed to become an inspiration for the military domain in terms of new methods of rationalisation, i.e. new commercial best practises. New security and defence policies, followed by a dramatic increase in participation in international PSOs, in combination with consequent budgetary reductions, as well as changes in legislation and the internationalisation of the defence industry, have forced the Swedish AF and FMV to make extensive alterations in the logistical interfaces between the actors in the military supply chain.

5.0 SWEDISH CONSUMPTION LOGISTICS IN THE POST COLD WAR ERA

From a Swedish military perspective, the two dominant consequences of the ending of the Cold War is that the Swedish AF is now being used, and that it is primarily being used outside the country's borders. The transformation from a dormant defence force against invasion, predominantly engaged in education of conscript soldiers, to a modern, professional, flexible and mobile operational defence force, being actively used in operations throughout the world, have had major implications for military logistics and the military supply and support network. As has already been demonstrated in Figure 1 and Figure 2, Swedish strategic (production) military logistics, i.e. defence acquisition, has undergone, and is still undergoing, a dramatic transformation after the ending of the Cold War. This chapter will demonstrate that Swedish operational and tactical military (consumption) logistics have gone through an even more dramatic transformation, partly because of the changes in Swedish strategic military logistics.



Figure 3: The two levels of resources in Swedish military logistics, and the connection to the NATO line and role terminology (Source: the Swedish AF).

Swedish military logistics is divided into two levels of resources, i.e. the forward and the rear resource area [7]. The forward resource area, or the Forward Logistics Support Area (FLSA), is in the Area Of Responsibility (AOR) in the Joint Operations Area (JOA). The forward resource area consists of the military units' own resources, as well as the resources of specialised logistics units. The forward area logistical resources and activities are primarily dimensioned based on tactical and operational demands

and requirements. The rear resource area is, in turn, divided into two different areas, the Home Logistics Base (HLB) in Sweden, and the Joint Rear Area Support Base (JRASB) in the Joint Rear Area (JRA) in the JOA. The rear resource area consists of the Swedish AF own resources, primarily FMLOG, territorial resources, and other actors' resources (i.e. civilian, national, and international partners). The rear area logistical resources and activities are allowed to display a higher degree of peace rationality, and standardised processes with other requirements for delivery and capacity [8].

Figure 3 schematically illustrates the two levels of resources of Swedish military logistics, as well as the connection to the NATO line and role terminology. Lines and roles is the division traditionally used in NATO logistics, but is also used by the Swedish AF nowadays. Lines divide military logistics into five resource levels. Roles are health and sick care, and are divided into four steps. FMLOG has the same responsibilities and tasks regarding logistical support, i.e. supplies and services, to a military unit, regardless if the unit participates in an international mission abroad, or is solving tasks in Sweden. To support a unit in an international mission, FMLOG will normally create a National Support Element (NSE), in order to handle support regarding those supplies and services that are a national responsibility. In order to rationalise the activities, different nations NSEs will sometimes be joined into a National Support Group (NSG). In Figure 3, an NSE and an NSG are included in the rear resource area.

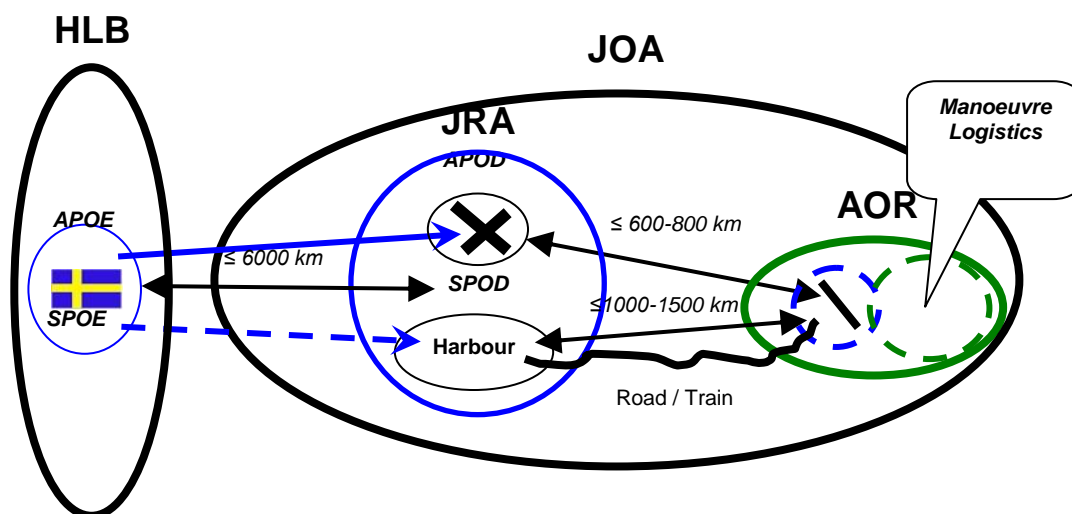


Figure 4: Lines of communication in the Swedish logistical concept for international missions (Source: the Swedish AF).

As mentioned previously, and as hinted at in Figure 3, strategic transportation, i.e. to transport the military units from the HLB to the JRA, and to keep them supported throughout the mission, is a key element in the logistical concept for international missions. If the strategic transport is an airlift, the flights will depart from the Air Port Of Embarkation (APOE) in the HLB and arrive at the Air Port Of Debarkation (APOD) in the JRA. Transportation by sea, on the other hand, will depart from the Sea Port Of Embarkation (SPOE) in the HLB and arrive at the Sea Port Of Debarkation (SPOD) in the JRA. For both sea and air transport, operational transport, by road or by rail, will then continue the voyage to the AOR, or, more specifically, to the Reception Staging and Onwards Movement (RSOM) area. A tactical transport will then transport units and logistical support the “last mile”. Figure 4 illustrates the Swedish logistical concept for international missions, including the Lines Of Communication (LOCs). The planning of strategic transportation is complex, as is exercising movement control (MOVCON). Hence, planning and MOVCON is exercised by a special National Movement Coordination Centre (NMCC) at the JFC.

6.0 DISCUSSION

In this chapter the factors that influence defence acquisition in the ongoing transformation of the AF, and the challenges that defence acquisition is faced with because of the development of these factors, are discussed. The discussion is based on the results of semi-structured interviews conducted with Subject Matter Experts (SMEs) within FMV and the Swedish AF, as well as on the experience of the author.

The drivers for change for defence acquisition after the ending of the cold war have been outlined in the previous chapters and can be summarised as:

- The ongoing transformation (RMA) of the AF.
- Significant changes in national security and defence policies.
- Extensive budgetary reductions for the AF.
- Shift from preparations (JIC) for WW3 in Europe, as well as from national defence, to participation in PSOs (PK, PE).
- Changes in national and international legislation regarding the conduct of public purchase.
- Transition from legislative regulation of defence procurement to contracts on commercial basis.
- LL from the wars (ODS) in the Persian Gulf made existing logistical concepts obsolete.
- Revolutionary development in ICT (WWW, EDI, RFID).
- Emergence of new commercial best practices in business logistics (outsourcing, SCM, JIT).
- Instructions from the MoD to utilise COTS, MOTS, and GOTS to a larger extent.
- Emergence of international cooperation in the area of defence acquisition (NAMSA).
- Emergence of international cooperation in the area of strategic transportation (MCCE, ATARES, SALIS, SAC, EATF, EATC), i.e. resources for air and sea transportation.
- Emergence of an array of potential PPPs between public purchasers and civilian suppliers.

Many external factors lie behind this transformation, but the political factors are, arguably, the most important ones. From the Swedish point of view, there are several political decisions that have influenced defence acquisition the past decade. First and foremost are, of course, the changes in security and defence policies and the ensuing decision to transform the defence forces from defence against invasion to a modern, flexible and mobile operational defence. One profound implication of this was that the logistics concept would have to be fundamentally changed, from building stock-piles of supplies in Sweden, JIC, to supplying and supporting military units participating in UN, EU, and NATO coalitions throughout the entire globe. The major logistical challenges of this decision were:

- How should the military supply chain be redesigned in order to accommodate the new requirements of the reformed AF?
- How should strategic deployment (particularly transportation) capability be ensured?
- How should overseas supply and support be ensured?

From the military perspective, factors that influence, or perhaps even interfere, with C2 of the supply chain, and factors that influence existing risks, or perhaps even create new risks, as well as the handling of these risks, are of the utmost importance. Logistical challenges from this perspective include:

- How should the supply and support chain be managed?
- How should the fragmented supply chain be managed?
- Who should manage the fragmented supply chain from “factory to foxhole”?

- How can contracts be used to manage the fragmented supply chain?
- Which different types of risks are inherent in defence procurement and the military supply chain?
- How have these risks traditionally been managed?
- How do COTS, MOTS, GOTS, new ICT, commercial best practices, and PPPs influence existing risks?
- What new risks are introduced by COTS, MOTS, GOTS, new ICT, commercial best practices, and PPPs?
- How should the existing and new risks in the supply chain be managed?
- Who should manage the existing and new risks in the supply chain?
- How can contracts be used to manage the existing and new risks?
- Which, if any, moral and ethical issues are associated with the concept of “transfer of risk” to suppliers, particularly contractors in the field?
- How should a DPA deal with the issue of “transfer of risk” to contractors?

There is a pressure on military logistics to enhance its performance, i.e. to become more efficient in peace and more effective in war, while at the same time decreasing its expenditure. Avenues that are already being followed in order to reduce costs include acquisition of COTS, MOTS and GOTS products and services, military implementation of commercial best practises (e.g. outsourcing and SCM), utilisation of new ICT, and employment of PPPs. Investigations regarding alternative avenues of enhancing performance and reducing costs have also been initiated. The challenges associated with these different initiatives include:

- How should a DPA decide which COTS, MOTS and GOTS products and services and, hence, which suppliers to utilise?
- How should COTS, MOTS and GOTS products and services be utilised in order to enhance the performance of defence procurement and the military supply chain?
- How should the contributions of COTS, MOTS and GOTS products and services be evaluated?
- How do roles and responsibilities in the supply chain change with the utilisation of COTS, MOTS and GOTS products and services?
- How should a DPA decide which new ICT to utilise?
- How should new ICT be utilised in order to enhance the performance of defence procurement and the military supply chain?
- How should the contributions of new ICT be evaluated?
- How do roles and responsibilities in the supply chain change with the utilisation of new ICT?
- How should a DPA decide which new commercial best practices to adapt and adopt?
- How should new commercial best practices be adapted and adopted in order to enhance the performance of defence procurement and the military supply chain?
- How should the contributions of commercial best practices be evaluated?
- How do roles and responsibilities in the supply chain change with the adaptation and adoption of commercial best practices?

- How should a DPA decide which types of PPPs to utilise in different circumstances?
- How should PPPs be utilised in order to enhance the performance of defence procurement and the military supply chain?
- How should the contributions of PPPs be evaluated?
- How do roles and responsibilities in the supply chain change with the utilisation of PPPs?
- Which other avenues (alternatives to COTS, MOTS and GOTS systems, new ICT, commercial best practices and PPPs) could be pursued, in order to enhance the performance of defence procurement and of the supply chain?
- How should a DPA decide which of these alternatives to pursue?
- How should these alternatives be utilised in order to enhance the performance of defence procurement and the military supply chain?
- How should the contributions of these alternatives be evaluated?
- How do roles and responsibilities in the supply chain change with the utilisation of these alternatives?

Military logistics, the military supply chain and defence acquisition are all in a state of dramatic change. FMV, and hence its staff, that was previously required to perform systems specifications and procurement in accordance with the process illustrated in Figure 1, is now required to also acquire capability directly, purchase COTS, MOTS and GOTS, etc. Because of these changes, FMV is faced with challenges like:

- How should a DPA deal with the internal cultural challenges that the external challenges inevitably must bring about?
- How should a DPA be organised in order to adequately meet the new challenges?
- Which new competencies are required, and which existing competencies become obsolete, in order for a DPA to transform from the previous system into the emerging one?

The Post Cold War challenges (opportunities and threats), induced by political, economic, social and technological developments, facing the AF can be summarised by:

- To perform new types of activities (PK, PE, PSO),
- In remote locations (KFOR, SFOR, EUFOR Althea, ISAF),
- In cooperation with new partners (UN-, NATO- and EU-coalitions),
- In novel ways (NCW/NBD, EBO, EBAO, CJTF, OHQ/FHQ/NBG),
- Using contracts rather than relying on legislation,
- While at the same time spending less money,
- By utilising COTS, MOTS and GOTS, capitalising on new ICT (TAV, ITV), adapting and adopting new commercial best practices (SCM), using PPPs, and through international cooperation (NAMSA, SALIS, SAC).

In the US and in the UK, these challenges are eloquently summarised as “Doing more with less”. If “doing more with less” is a goal to strive for, then the analytical support to a DPA can be divided into two distinct categories or phases; analytical support during the ongoing transformation, and analytical support once the transformation is over and new ways of doing business, i.e. new BMs, have been implemented.

7.0 CONCLUSIONS

During the Cold War Era, analytical support to the defence procurement process was, at least in Sweden, restricted to support to the Swedish AF in the formulation of capability requirements. The main reason for this focus was that the ensuing steps of the procurement process were linear, sequential and rather straightforward, involving the domestic defence industry and operating in a stable environment. The influence of regional and industrial policies was also significant, perhaps making analytical support an unwanted complication. In other words, there was only one BM at disposal to the FMV. In the Post Cold War Era, most of the external and internal factors affecting defence procurement that could be changed, have been changed. In many instances, the changes in these factors have been quite dramatic. The changes have, in fact, been so dramatic for defence procurement, that some countries are now referring to this discipline as defence acquisition, in order to emphasise the dramatic change of military purchase. The only BM of the Cold War Era is still valid, but is now only one of an entire spectrum of possible BMs.

There are definitely new possibilities for the analytical community to support defence acquisition in new ways. In this paper, it is argued that the new forms of analytical support to a DPA can be categorised as support to a DPA during the ongoing transformation, and support to a DPA after the transformation has resulted in changes being implemented. Based on the challenges as outlined in the previous chapter, a number of potential areas for new forms of analytical support to defence acquisition can be identified:

- Supply and support chain design.
- Supply and support chain management.
- Supply and support chain risk management.
- Identification and evaluation of potential business models for defence acquisition.
- Evaluation of efficiency, effectiveness and performance, including definition of measures of effectiveness (MOEs) and measures of performance (MOPs).
- Moral and ethical issues associated with outsourcing and contracting.
- Development of Decision Support Systems (DSS), decision trees, decision mechanisms, and other support to decisions regarding what to make, what to buy, and how to buy.
- Defence acquisition culture, organisation, and competencies.

Some of these areas are valid primarily for the ongoing transformation; some are valid first and foremost after the implementation of the changes; whereas some of the areas are valid both before and after the implementation.

During the ongoing transformation, it is imperative that defence acquisition culture, organisation, and competencies be analysed and evaluated. This is probably an area in which a DPA would benefit the most from outside analytical support, but also an area in which a DPA would probably be most reluctant to welcome outside analytical support. The corporate culture, the internal organisation, and the competencies among the individual employees, are all consequences of the requirements of the Cold War Era. Precious little has been done the last decades in order to change culture, organisation and competencies in order to more properly address the challenges of the Post Cold War Era. The change from technical experts to business men ought to have had a more profound effect on culture, organisation and competencies than what has hitherto been observable. This is definitely an area where new forms of analytical support should be employed in order to seek answers to the following questions; Which new competencies are required, and which existing competencies will become obsolete, when a DPA is about to transform from the Cold War procurement process to the Post Cold War acquisition process?; How should a DPA be organised in order to adequately meet the new challenges of the Post Cold War Era?; How should a DPA deal with the internal cultural challenges that the external challenges inevitably must bring about?

Sometime during the ongoing transformation, it must be decided how decisions regarding what to make; what to buy; and how to buy, i.e. which BM to use; should be made by the DPA. The types of questions that must be answered include; Should a DSS be developed?; Should a simple decision tree be defined?; Which decision mechanisms are necessary in order to make informed “buy or make” decisions?; How should defence core business be established?; Which decision mechanisms are necessary in order to establish Value-for-Money (VFM)?; Which decision mechanisms are necessary in order to reach reward sharing decisions?; Which decision mechanisms are necessary in order to reach risk sharing decisions?

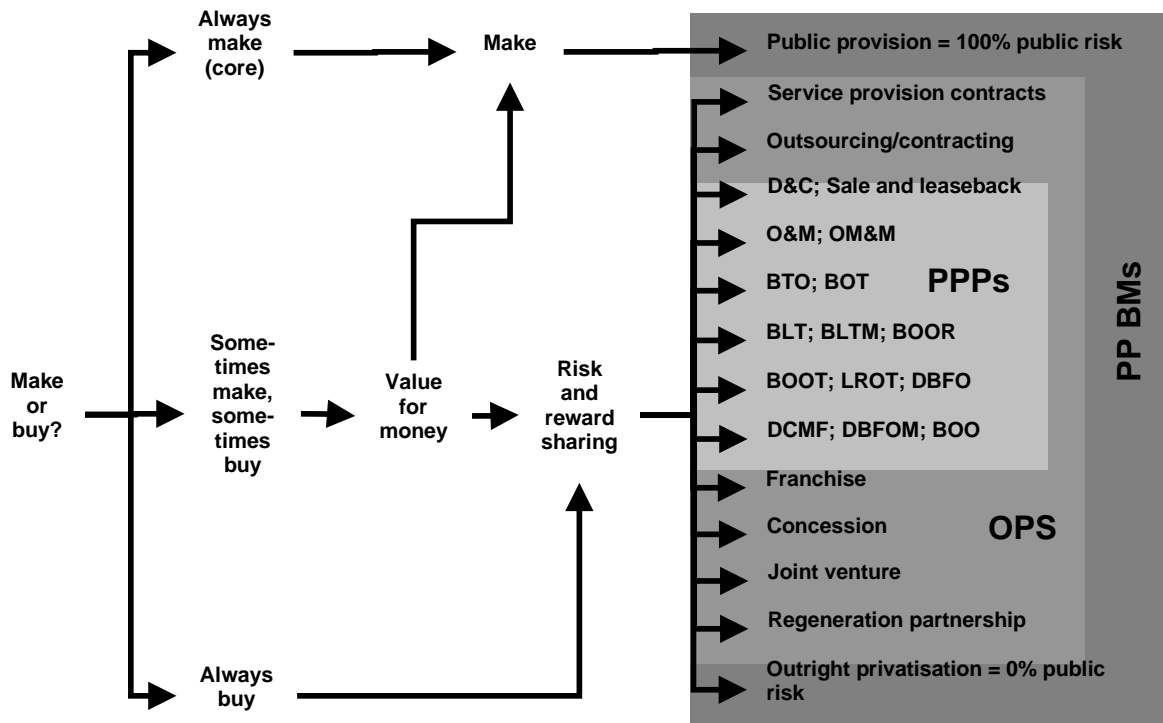


Figure 5: A schematic decision tree for defence acquisition (Source: the author).

Should the DPA decide to use a decision tree, perhaps it would be something like the schematic one depicted in Figure 5, which illustrates the decisions that will have to be made by a DPA. First of all, the core business, that should always be performed internally, must be defined. Similarly, business that should always be performed externally must also be defined. For the rest of the business, VFM must be calculated. If it can be established that VFM would be increased by performing the business externally, it must also be decided how rewards and risks should be shared between the public and the private sector, i.e. which form of BM that should be used. In a forthcoming paper [9] it is proposed that the resulting agreements between the public and the private sector can be categorised as Public Private Business Models (PPBs). Between the two exaggerated alternatives, i.e. public provision and outright privatisation, the Swedish alternative [10] to PPP, i.e. Public Private Cooperation (PPC, or OPS for Offentlig Privat Samverkan), encompass the remaining forms of public private agreements. Hence, the Swedish concept [11] includes PPPs, as well as outsourcing, contracting, franchising, concessions, and JVs. Clearly, PPPs are a subset of PPCs, but there is no clear definition of what PPPs are, or which BMs they include, but one suggestion [12] is that PPPs include Design and Construct (D&C); Sale and leaseback; Operate and Maintain (O&M); Operate, Maintain and Manage (OM&M); Build-Transfer-Operate (BTO); Build-Operate-Transfer (BOT); Build-Lease-Transfer (BLT); Build-Lease-Transfer-Maintain (BLTM); Build-Own-Operate-Remove (BOOR); Build-Own-Operate-Transfer (BOOT); Lease-Renovate-Operate-Transfer (LROT); Design-Build-Finance-Operate (DBFO); Design-Construct-Manage-

Finance (DCMF); Design-Build-Finance-Operate-Manage (DBFOM); Build-Own-Operate (BOO). To assist a DPA in creating a decision tree, or a DSS, including its different decision mechanisms, is definitely something that could constitute a new form of analytical support during the transformation. Once the changes of the transformation have been implemented, the operations of the DPA, including make and buy decisions, VFM calculations, and risk and reward sharing decisions, are likely to present the analytical community with ample opportunities for new forms of analytical support to a DPA. Even with a DSS, or a decision tree, with well developed decision mechanisms, for each complex system, or capability, that is to be procured, a number of analyses will have to be performed. Analytical support is likely to be needed for calculations of VFM, as well as for decisions regarding risk and reward sharing.

It is by now becoming explicitly obvious that while solving some problems, and, arguably, creating better VFM for the tax payer, outsourcing, contracting out and contractors in the field simultaneously create new forms of problems. Incidents involving the personnel of Private-Military-Companies (PMCs) have illustrated some of these problems. Other problems have been demonstrated by attacks on civilian, undefended, convoys. Whether or not outsourcing and contracting, i.e. transfer of risk, especially physical risk, involves any moral or ethical issues remains to be analysed and evaluated. Should such an analysis and evaluation lead to the conclusion that there indeed are issues of moral and ethics to consider, further analysis and evaluation should be required in order to decide how to handle these issues. Since this constitutes an entirely new arena to the analytical community, it is self-evident that new forms of analytical support are required in this area.

In order to analyse and evaluate the efficiency, effectiveness and performance of the ongoing transformation of the logistics function, including defence acquisition and the design of the supply network, it is, of course, necessary to have adequate MOEs and MOPs. While some of these may already be in existence, others will have to be developed. The analytical community will have to provide analytical support in the development of new MOEs and MOPs; in the analysis and evaluation of efficiency, effectiveness and performance in the design phase during the ongoing transformation; and in the analysis and evaluation of efficiency, effectiveness and performance once the changes have been implemented. While this type of analytical support does not necessarily constitute new forms of analytical support per se, it is certainly of the utmost importance that it is provided to a DPA during and after the ongoing transformation.

In Figure 5 it is proposed that all forms of agreements between the public and the private sector results in different forms of PPBMs. Regardless if this terminology is accepted or not, the analytical community still has to provide analytical support in order to identify and evaluate potential BMs for defence acquisition.

In the Post Cold War Era, the supply and support network includes many more actors, with different roles and responsibilities, than the supply and support chain of the Cold War Era. The term supply network is used rather than supply chain in order to emphasise the increase in the number of actors, and because they have different roles and responsibilities in different parts of the network. It is probably also justifiable to refer to the supply network as fragmented, because of the increased number of actors with different roles and responsibilities. This increase in complexity also increases the complexity in supply and support network design, management, and risk management. Even though these issues do not necessarily traditionally belong to the responsibilities of a DPA, the DPA will sign contracts with suppliers that will have a tremendous effect on supply and support network design, management, and risk management. Hence, these issues are rapidly becoming implicit responsibilities of the DPA whether this is recognised or not. This will not only require new forms of analytical support, but also the involvement of the AF, since they are the ultimate customers of what the DPA purchases.

New forms of analytical support are needed in order to assist the DPA and the AF with the identification, analysis, allocation, transfer, and management of risk. These issues will have to be dealt with prior to the signing of contracts with suppliers. While a signed contract is certainly not a point of no return, any

contractual changes initiated by the AF or the DPA are likely to come with hefty price tags, depending on the construction of the contracts, of course.

The fragmentation of the supply chain, with few actors and clear roles and responsibilities, to a supply network, with many actors and unclear roles and responsibilities, not only increases complexity regarding supply and support network risk management, but also supply and support network management. That the AF must ultimately be the ones that will have to manage the network seems irrefutable, but how this should be accomplished with the increased complexity of the fragmentation of the network seems less self-evident. New forms of analytical support are likely to be required in order to establish how supply and support network management should be ensured and enforced.

The fragmentation of the supply and support network is an unavoidable consequence of the quest for VFM and risk transfer, i.e. of outsourcing, contracting out, and the inevitable occurrence of contractors in the field. Even if fragmentation is an unavoidable, and for the time being acceptable, consequence of outsourcing and contracting out, it should not be allowed to be done foolhardily, without considerable and adequate forethought. Hence, there is definitely room for new forms of analytical support to the AF and the DPA in supply and support network design.

8.0 ACRONYMS

A400M:	Airbus A400M
AF:	Armed Forces
AN-124:	Antonov An-124 Ruslan
AOR:	Area Of Responsibility
APOD:	Air Port Of Debarkation
APOE:	Air Port Of Embarkation
ATARES:	Air Transport, Air Refuelling and other Exchanges of Services
BG:	Battle Group
BM:	Business Model
BOO:	Build-Own-Operate (a form of PPP)
BLT:	Build-Lease-Transfer (a form of PPP)
BLTM:	Build-Lease-Transfer-Maintain (a form of PPP)
BOOR:	Build-Own-Operate-Remove (a form of PPP)
BOOT:	Build-Own-Operate-Transfer (a form of PPP)
BOT:	Build-Operate-Transfer (a form of PPP)
BTO:	Build-Transfer-Operate (a form of PPP)
C-17:	Boeing (formerly McDonnell Douglas) C-17 Globemaster III
C-130:	Lockheed C-130 Hercules
C2:	Command and Control
CA:	Comprehensive Approach
CBA:	Cost Benefit Analysis

CC:	Component Command
CD&E:	Concept Development and Experimentation
CIS:	Commonwealth of Independent States
CJTF:	Combined Joint Task Force
COTS:	Commercial-Off-The-Shelf
D&C:	Design and Construct (a form of PPP)
DBA:	Dominant Battle-space Awareness
DBFO:	Design-Build-Finance-Operate (a form of PPP)
DBFOM:	Design-Build-Finance-Operate-Manage (a form of PPP)
DCMF:	Design-Construct-Manage-Finance (a form of PPP)
DLO:	Defence Logistics Organisation
DLod:	Defence Lines of Development
DMAIC:	Define, Measure, Analyse, Improve, and Control
DMI:	Define, Measure, and Improve
DoD:	Department of Defense (US)
DOTMLPF:	Doctrine, Organisation, Training, Materiel, Leadership and education, Personnel and Facilities
DPA:	Defence Procurement Agency
DRA:	Defence Research Agency
DSS:	Decision Support Systems
EAC:	European Airlift Centre
EATC:	European Air Transport Command
EATF:	European Air Transport Fleet
EBAO:	Effects Based Approach to Operations
EBO:	Effects Based Operations
EDI:	Electronic Data Interchange
EU:	European Union
EUFOR:	European Union Force
FHQ:	Force Headquarters
FLSA:	Forward Logistics Support Area
FMLOG:	The Swedish Defence Logistics Organisation
FMV:	The Swedish Defence Materiel Administration
FOI:	The Swedish Defence Research Agency
GOTS:	Government-Off-The-Shelf
GWOT:	Global War On Terrorism

HLB:	Home Logistics Base
HQ:	Head Quarters
ICT:	Information and Communication Technology
IFOR:	Implementation Force
ISAF:	International Security Assistance Force
ITV:	In Transit Visibility
JCD&EC:	Joint Concept Development and Experimentation Centre
JFC:	Joint Forces Command
JIC:	Just-In-Case
JIT:	Just-In-Time
JOA:	Joint Operations Area
JRA:	Joint Rear Area
JRASB:	Joint Rear Area Support Base
JV:	Joint Venture
KFOR:	Kosovo Force
LL:	Lessons Learned
LOC:	Line Of Communication
LOU:	“The Law Regarding Public Purchase”
LROT:	Lease-Renovate-Operate-Transfer (a form of PPP)
M&S:	Modelling and Simulation
MA:	Morphological Analysis
MBT:	Main Battle Tank
MCCE:	Movement Coordination Centre, Europe
MoD:	Ministry of Defence
MOVCON:	Movement Control
MNE:	Multinational Experimentation
MOE:	Measure Of Effectiveness
MOP:	Measure Of Performance
MOTS:	Military-Off-The-Shelf
NAMSA:	NATO Maintenance and Supply Agency
NATO:	North Atlantic Treaty Organisation
NBD:	Network Based Defence
NBG:	Nordic Battle Group
NCW:	Network Centric Warfare
NEC:	Network Enabled Capabilities

NMCC:	National Movement Coordination Centre
NSE:	National Support Element
NSG:	National Support Group
O&M:	Operate and Maintain (a form of PPP)
ODS:	Operation Desert Shield (1990)
ODS:	Operation Desert Storm (1991)
OPS:	Offentlig Privat Samverkan (The Swedish form of PPP)
OEF:	Operation Enduring Freedom
OHQ:	Operational Headquarters
OM&M:	Operate, Maintain and Manage (a form of PPP)
PDCA:	Plan, Do, Check, Act
PDSA:	Plan, Do, Study, Act
PE:	Peace Enforcement
PfP:	Partnership for Peace
PK:	Peacekeeping
POL:	Petroleum, Oil, and Lubricants
PMC:	Private-Military-Companies
PPBM:	Public Private Business Models
PPC:	Public Private Cooperation (The Swedish form of PPP)
PPP:	Public Private Partnership
PSM:	Problem Structuring Methods
PSO:	Peace Support Operation
RFID:	Radio Frequency Identification
RMA:	Revolution in Military Affairs
RML:	Revolution in Military Logistics
ROE:	Rules Of Engagement
RSOM:	Reception Staging and Onwards Movement
SAC:	Strategic Airlift Capability
SALIS:	Strategic Airlift Interim Solution
SCC:	Sealift Coordination Centre
SCM:	Supply Chain Management
SFOR:	Stabilisation Force
SFRY:	Socialist Federal Republic of Yugoslavia
SME:	Subject Matter Expert
SPOD:	Sea Port Of Debarkation

SPOE:	Sea Port Of Embarkation
SU:	Soviet Union
TA:	Technical Arrangement
TAV:	Total Asset Visibility
TEPID OIL:	Training, Equipment, Personnel, Information, Doctrine, Organisation, Infrastructure and Logistics
UK:	United Kingdom (of Great Britain and Northern Ireland)
UN:	United Nations
UNSC:	UN Security Council
US:	United States (of America)
VFM:	Value-for-Money
VM:	Velocity Management
WP:	Warsaw Pact
WW1:	First World War
WW2:	Second World War
WW3:	Third World War (an anticipated, hypothetical third world war on European soil)
WWW:	World-Wide-Web

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